

1 CLAIMS

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3 1. An interface system for a personal computer
4 comprising an array of data input keys having multi-
5 character indicia, said interface system further
6 comprising: data storage means; data processing
7 means; and data display means, wherein the data
8 processing means is adapted to facilitate a
9 reduction in the number of key presses required to
10 create a given data string to less than the number
11 of characters within said data string by:

12 (i) filtering data stored within the data
13 storage means by initial character, as
14 determined by the character or characters
15 ascribed to a data input key initially
16 pressed by a user;

17 (ii) prioritising said filtered data in real-
18 time according to user-configurable
19 prioritisation parameters; and

20 (iii) displaying one or more prioritised data
21 strings on the data display means for
22 subsequent selection by the user.

23

24 2. An interface system according to claim 1,
25 wherein successive key presses act to filter further
26 the number of data strings displayed on the data
27 display means for subsequent selection by the user.

28

29 3. An interface system according to claim 1 or 2,
30 wherein the data input keys within the array have
31 multi-character indicia which are selected to accord
32 with a statistical extrapolation of the most used

1 alphanumeric character combinations in a given
2 language, to thus facilitate a further reduction in
3 the number of key presses required to create a given
4 data string.

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6 4. An interface system according to any preceding
7 claim, wherein the data input keys having multi-
8 character indicia are composite keys having at least
9 primary and secondary indicia corresponding to
10 primary and secondary key-values or key-functions.

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12 5. An interface system according to any preceding
13 claim, wherein the data storage means is defined by
14 one or more data dictionaries in which qualitative
15 and/or quantitative information is stored in
16 relation to each data string.

17
18 6. An interface system according to claim 5,
19 wherein a configuration means is provided to allow a
20 user to selectively enable or disable physical
21 interactivity reduction characteristics of the
22 interface system which facilitate a further
23 reduction in the number of key presses required to
24 create a given data string.

25
26 7. An interface system according to claim 6,
27 wherein the physical interactivity reduction
28 characteristics are selectable from the group
29 comprising:

30 (i) entering a space after selection of a data
31 string;

- 1 (ii) limitation of displayed data strings to
- 2 those having a total number of characters
- 3 greater than the number of key presses
- 4 required to display said data string on
- 5 the data display means;
- 6 (iii) expanding typed or selected mnemonics,
- 7 abbreviations or acronyms into their
- 8 corresponding full data strings;
- 9 (iv) performing two-way translations between
- 10 data strings and user-configurable
- 11 dictionary definitions or descriptions.
- 12 (v) enabling the selection of a secondary key-
- 13 value or key-function by means of double-
- 14 pressing a data input key;
- 15 (vi) enabling the selection from a list of
- 16 different data strings stored within the
- 17 data storage means by means of double-
- 18 pressing a data input key, said data
- 19 string having an initial letter or letters
- 20 corresponding to the key-value of that
- 21 key; and
- 22 (vii) enabling the right-to-left and/or left-to-
- 23 right deletion of n characters, words,
- 24 sentences or paragraphs by means of a
- 25 single key press.

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27 8. An interface system according to claim 7,

28 wherein the secondary key-value or key-function

29 obtained by double pressing a data input key is

30 identical with the SHIFT value of that key.

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1 9. An interface system according to claim 7 or 8,
2 wherein each double-press must be completed within a
3 predetermined period of time in order to select the
4 secondary key-value or key-function.

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6 10. An interface system according to any of claims
7 7 to 9, wherein the secondary key-value corresponds
8 to the secondary indicia of a composite key having
9 multi-character indicia.

10

11 11. An interface system according to any of claims
12 7 to 9, wherein the secondary key-value corresponds
13 to a capitalised conventional key-value.

14

15 12. An interface system according to any of claims
16 7 to 11, wherein there is provided at least one
17 function key operable in combination with a
18 composite key and adapted to access the secondary
19 key-value or key-function.

20

21 13. An interface system according to claim 7,
22 wherein the data strings selectable from the list
23 are actively prioritised within the data storage
24 means according to according to user-definable
25 quantitative and/or qualitative information.

26

27 14. An interface system according to claim 7 or 13,
28 wherein, the ability to select a different data
29 string from the list is disabled upon pressing of
30 the SPACE key, or another non-character key.

31

1 15. An interface system according to any of claims
2 6 to 14, wherein the configuration means also allows
3 a user to selectively adjust the prioritisation
4 parameters according to the desired qualitative
5 and/or quantitative characteristics of the data
6 stored within the, or each, data dictionary.

7
8 16. An interface system according to claim 15,
9 wherein the qualitative and/or quantitative
10 information comprises statistical and/or probability
11 information relating to each data string stored
12 within the data storage means.

13
14 17. An interface system according to claim 15 or
15 16, wherein all qualitative and quantitative
16 information is dynamically updated in real-time.

17
18 18. An interface system according to any of claims
19 15 to 17, wherein the data processing means
20 maintains lookup chains between two or more data
21 dictionaries such that a given data string in a
22 first data dictionary is mapped to a data string or
23 strings in one or more other data dictionaries for
24 selection by the user.

25
26 19. An interface system according to claim 18,
27 wherein where a given data string in a first data
28 dictionary is mapped to a plurality of data strings
29 in one or more other data dictionaries, said data
30 strings are prioritised via the configuration means
31 for ease of selection by the user.

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1 20. An interface system according to claim 18 or
2 19, wherein the mapping is performed dynamically.

3
4 21. An interface system according to claim 20,
5 wherein the data processing means can selectively
6 bypass or reset the dynamically updated qualitative
7 and quantitative information.

8
9 22. An interface system according to any of claims
10 15 to 17, wherein the data processing means
11 maintains associative links between any given data
12 string and up to n other data strings to thus
13 display or project the most relevant longer data
14 string comprised of n+1 data strings for selection
15 by the user.

16
17 23. An interface system according to claim 22,
18 wherein a plurality of the most relevant longer data
19 strings are made available or displayed in a
20 prioritised list for selection by the user.

21
22 24. An interface system according to claim 22 or
23 23, wherein selection of a longer data string
24 induces a repetition of associative linking such
25 that a further one or more relevant longer data
26 strings are displayed for selection by the user.

27
28 25. An interface system according to claim 23 or
29 24, wherein the relevance/prioritisation of the, or
30 each, longer data string is determined according to
31 statistical and/or probability information stored
32 within the, or each, data dictionary.

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2 26. An interface system according to claim 25,
3 wherein statistical information relates to the
4 historical inputting and/or selection of data
5 strings.

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7 27. An interface system according to claim 26,
8 wherein the historical inputting and/or selection
9 information can be one or more of the following: (i)
10 frequency of inputting; (ii) frequency of selection
11 (iii) character length; (iv) lexical pattern
12 density; and (v) chronological weighting.

13

14 28. An interface system according to claim 25,
15 wherein probability information can be one or more
16 of the following: (i) occurrence and/or association
17 ratios of two or more data strings within a longer
18 data string; (ii) context ratios determining the
19 likelihood of a given data string being grouped with
20 one or more other data strings to determine the
21 context of a longer data string.

22

23 29. An interface system according to any of claims
24 23 to 28, wherein the one or more data strings
25 displayed on the data display means for subsequent
26 selection by the user are displayed in list format
27 in descending order of priority.

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29 30. An interface system according to any of claims
30 5 to 29, wherein synchronisation of data
31 dictionaries between two or more personal computers

1 can be accomplished by means of wired or wireless
2 connectivity.

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4 31. An interface system according to any of claims
5 5 to 30, wherein synchronisation of data
6 dictionaries between two or more personal computers
7 can be accomplished by means of downloading from a
8 common database.

9

10 32. An interface system according to any of claims
11 5 to 31, wherein the, or each, data dictionary is
12 manually populated.

13

14 33. An interface system according to any of claims
15 5 to 31, wherein the population of the, or each,
16 data dictionary with data and its corresponding
17 qualitative and/or quantitative information may be
18 accelerated by uploading onto the data storage means
19 data strings resident on a personal computer or a
20 remotely connected device.

21

22 34. An interface system according to any of claims
23 5 to 31, wherein the dictionaries are populated by
24 optically scanning external data strings by means of
25 scanning apparatus.

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27 35. Data input apparatus for a personal computer
28 comprising an array of data input keys having multi-
29 character indicia, said apparatus adapted to
30 facilitate a reduction in the number of key presses
31 required to create or delete a given data string to

1 less than the number of characters within said data
2 string.

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4 36. Data input apparatus according to claim 35,
5 wherein the multi-character indicia comprise a
6 combination of alphabetic characters.

7

8 37. Data input apparatus according to claim 35 or
9 36, wherein the multi-character indicia include
10 digraphs.

11

12 38. Data input apparatus according to any of claims
13 35 to 37, wherein the multi-character indicia
14 include tri-graphs.

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16 39. Data input apparatus according to any of claims
17 35 to 37, wherein the multi-character indicia
18 include tetra-graphs.

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20 40. Data input apparatus according to any of claims
21 35 to 39, wherein the keys within the array are
22 arranged such that the most frequently used multi-
23 character combinations in a given language are
24 positioned closest to the home keys.

25

26 41. Data input apparatus according to any of claims
27 35 to 40, wherein the keys having multi-character
28 indicia are composite keys having at least primary
29 and secondary indicia.

30

31 42. Data input apparatus according to any of claims
32 35 to 41, wherein the keys having multi-character

1 indicia are provided substantially centrally on a
2 QWERTY keyboard between home keys F and J,
3 respectively.

4
5 43. Data input apparatus according to any of claims
6 35 to 41, wherein the keys having multi-character
7 indicia are provided on a DVORAK or MALTRON®
8 keyboard.

9
10 44. Data input apparatus according to any of claims
11 35 to 43, wherein the array of keys are represented
12 on a graphical touch screen.

13
14 45. Data input apparatus according to claim 44,
15 wherein the multi-character indicia on the graphical
16 touch screen are dynamically updated in real time
17 such that the multi-character combinations keyed
18 most frequently by a user are positioned closest to
19 the home keys.

20
21 46. Data input apparatus for a personal computer
22 having calculator functionality, said apparatus
23 comprising an array of conventional numerical and
24 calculator operator keys, a plurality of calculator
25 control-keys and display means located on the input
26 apparatus, wherein said control-keys are operable in
27 combination with said calculator operator keys
28 and/or said numerical keys to: (i) selectively send
29 calculator-related key values to a computer; and
30 (ii) selectively perform mathematical calculations
31 and display the results of said calculations on the

1 display means and/or send said results to a
2 computer.

3

4 47. Data input apparatus according to claim 46,
5 wherein the calculator operator key values are
6 selectable from the group comprising ., +, -, /, *,
7 %, $\sqrt{}$, +/-, C/AC, MKUP, SEND and ENTER.

8

9 48. Data input apparatus according to claim 46 or
10 47, wherein the calculator control-keys can toggle
11 between activated and deactivated states.

12

13 49. Data input apparatus according to any of claims
14 46 to 48, wherein the calculator control-keys
15 comprise: (i) a first control key for selectively
16 displaying the results of calculations performed
17 using the array of numerical and calculator operator
18 keys on the display means; and (ii) a second control
19 key for selectively sending the results of
20 calculations performed using the array of numerical
21 and calculator operator keys to a computer.

22

23 50. Data input apparatus according to claim 47,
24 wherein the second control key is the SEND key
25 which, when pressed, acts to send the value
26 displayed on the display means to the computer.

27

28 51. Data input apparatus according to claim 47,
29 wherein by pressing the ENTER key, the calculator
30 performs the most recent calculation and updates the
31 display means accordingly without sending same to
32 the computer.

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2 52. Data input apparatus according to claim 49,
3 wherein when both the first and second control keys
4 are in deactivated states the conventional numerical
5 and/or calculator operator key values themselves are
6 sent to a computer without performing mathematical
7 calculations.

8

9 53. Data input apparatus according to any of claims
10 46 to 49, wherein the apparatus is provided with a
11 retention buffer, which holds a calculation history
12 of n most recent numeric entries, operators and
13 equated values.

14

15 54. Data input apparatus according to claim 53,
16 wherein the retention buffer allows a user to
17 regress, recur and/or rectify calculations from any
18 previous point within the buffer history.

19

20 55. Data input apparatus for a personal computer
21 comprising an array of data input keys, said
22 apparatus adapted to facilitate a reduction in the
23 number of key presses required to create a given
24 data string to less than the number of characters
25 within said data string; and wherein the apparatus
26 comprises one or more function-lock keys that are
27 selectable by a user to lock the functionality of
28 the data input keys in one of two modes to maintain
29 said selected mode until a subsequent de-selection
30 of said function-lock key by the user.

31

1 56. Data input apparatus according to claim 55,
2 wherein the function-lock keys are chosen from the
3 group comprising: ALT Lock, CTRL Lock, SEQ Lock and
4 DUAL Lock.

5

6 57. Data input apparatus according to claim 56,
7 wherein the SEQ Lock key allows the selection of
8 secondary key-values by means of sequential as
9 opposed to simultaneous key presses.

10

11 58. An interface system for a personal computer
12 comprising data input apparatus according to any of
13 claims 35 to 45.